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ABSTRACT

Two methods to improve the teaching performance of clinical teaching physicians were studied: an intensive feedback method and a seminar. Both methods were designed to help clinical teachers analyze their teaching and implement more effective teaching methods. Pre- and post-intervention data were collected early and late in each attending physician's 1-month teaching rotation. In addition to considering clinical teachers' evaluation of the methods and teacher self-assessments, feedback was provided by student and housestaff ratings of the teachers, and videotape ratings of actual clinical instruction made by trained raters. Comparisons were made to teachers who only received written feedback from students and housestaff. The seminar method presented specific examples of clinical teaching, including viewing re-enacted videotapes of clinical rounds. The method also facilitated discussion of videotapes, teacher's review of student and housestaff ratings compared to self-ratings, and teacher's identification of desired teaching changes. Research results indicate that effective methods of improving clinical teaching can be developed. Five recommendations for use of the methods are offered, including providing educational tools/concepts applicable to the teaching setting. (SW)

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Issues in the Improvement of Clinical Instruction

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The improvement of clinical instruction is a complex task which encompasses: 1) the identification of the needs of faculty members, 2) the development of effective methods to address those needs, and 3) the involvement of faculty in the use of the methods. As shown in Stritter's review of research in faculty development (1983), there is a strong need for continued empirical research in each of these areas. In this symposium, results of 6 years of research directed towards the development of methods to improve attending physicians' teaching will be presented. Discussion will focus on how these results both further our understanding of critical issues in teaching improvement and indicate directions for future work.

In identifying the needs of clinical teachers, at least two components should be considered: teachers' attitudes and teaching performance. In our research we have assessed clinical teachers' attitudes toward clnical teaching in general as well as their opinions regarding their own teaching. Two main findings emerged from this research. First, all of the 110 attending physicians who participated in our studies indicated that the role of the attending physician has general importance to medical training as well as personal importance to the individual teacher. Second, when rating their own teaching, these teachers generally gave themselves lower ratings than they were given by their own students and housestaff (Skeff, Campbell, and Stratos, 1984). These findings indicate that clinical teachers view their role as being important, and that they recognize that their performance could use improvement.

The study of teaching performance can provide information about teachers' needs which supplements that derived from teachers' attitudes and perceptions. Two major conclusions may be drawn from our studies. First, videotape analysis indicates that clinical teachers need improvement across a wide range of educational areas. For example, when teachers were rated by trained raters on a set of educational concepts (including, e.g., management of session, communication of expectations, evaluation), the average score for each concept on a 5 point scale was less than 2.5 (Skeff, Campbell, and Stratos, 1984). Second, the individual needs of clinical teachers are likely to differ. Following participation in a teaching improvement method, attending physicians were asked to identify changes needed in their teaching. Categorization of the lists of changes generated by these teachers showed great variation across individuals (Skeff, Campbell, Stratos, Jones, and Cooke, 1984).

To address the needs of clinical teachers, we have developed and studied two methods, an Intensive Feedback Method and a Seminar Method. These methods share two goals: 1) to guide teachers in the analysis of their teaching, and 2) to generate,

and aid teachers in the implementation of, more effective teaching methods. The effectiveness of these teaching improvement methods was assessed using an experimental design in which pre- and post-intervention data were collected for all subjects. The data were collected early and late in each attending physician's one-month teaching rotation. The methods were evaluated on the basis of the following sets of data: 1) attending physician assessments of the benefits of the method, 2) teacher self-assessments, 3) student and housestaff ratings of their teachers, and 4) ratings of videotapes of actual clinical instruction.

The Intensive Feedback Method consisted of a one-hour session in which a facilitator-colleague helped the teacher review several sources of feedback regarding teaching performance. These sources included: 1) a videotape of the teacher's attending rounds, 2) the teacher's self-assessment ratings, and 3) ratings of the teacher by students and housestaff.

The effectiveness of the method was assessed by comparing subjects who received the method to subjects who reveived written feedback from students and housestaff and to subjects who received no intervention (Skeff, 1983). The results of questionnaire data indicated that this method was perceived as beneficial by the teachers who received it. It is notable that no more than 50% of subjects who received only written feedback from students perceived that method as beneficial, in spite of the fact that student questionnaire feedback is the most common teaching improvement method in use today.

Videotape ratings were made by trained raters who were blinded to the experimental assignment of the subjects. Ratings were made across six relatively high inference aspects of teaching including 1) teacher awareness of learners, 2) learning climate, 3) evaluation of and feedback to the learners, 4) organization and clarity, 5) teacher's use of techniques to increase retention, and 6) management of the teaching session. In addition, ratings of overall teaching performance were made. As shown in Table 1, post-treatment ratings on both the overall ratings and the average category rating revealed higher scores in the experimental group, indicating a positive effect of the method. It is interesting to note that on the average score, the ratings indicated that a major cause of the difference between experimental and control groups was due to a decrement in scores of the control group.

TABLE 1

Ratings of Videotaped Teaching Performance

	Rating of Overall Teaching Performance ($p = 0.08$)*		Average of the Ratings of Specific Categories of Teaching Behavior ($p = 0.03$)*	
	Pretreatment Mean (SD)	Post-Treatment Mean (SD)	Pretreatment Mean (SD)	Post-Treatment Mean (SD)
Intensive feedback group	3.42 (0.62)	3.94 (0.60)	3.35 (0.39)	3.37 (0.50)
Videotape control group	3.45 (0.69)	3.61 (0.69)	3.36 (0.45)	3.09 (0.48)

* Significance level based on comparison of post-treatment means using analysis of covariance.

Although the teachers perceived benefits of the method and the videotape ratings indicated that it had a positive effect, the ratings of the students and housestaff did not show significant differences between the different treatment groups (Table 2). The reasons for this finding are not completely clear, but two possible explanations may be that 1) the initial opinions of students and housestaff are difficult to change, and 2) the relatively high initial ratings by the students created a "ceiling effect".

TABLE 2

Evaluation of Teaching by Trainee Questionnaires (Five-Point Scale)

	Average of 45 Questionnaire Items*		Overall Performance Rating*	
	Pretreatment Mean (SD)	Post-Treatment Mean (SD)	Pretreatment Mean (SD)	Post-Treatment Mean (SD)
Intensive feedback group	4.09 (0.34)	4.17 (0.34)	4.16 (0.52)	4.23 (0.55)
Videotape control group	4.32 (0.39)	4.30 (0.54)	4.32 (0.58)	4.36 (0.77)
Questionnaire feedback group	4.19 (0.42)	4.31 (0.41)	4.22 (0.73)	4.40 (0.71)
Questionnaire control group	4.08 (0.52)	4.18 (0.53)	3.95 (0.74)	4.27 (0.63)

* All p values nonsignificant (analysis of covariance).

Although the results of the Intensive Feedback Method appeared promising, there are several drawbacks to the method. First, it requires an extensive amount of facilitator time. It is the opinion of the authors that few institutions could provide enough facilitators to have an impact upon the majority of clinical teachers around the country. Second, although each individual teacher benefited from the review of his own teaching, other teachers were not able to gain from his experience. Because of these limitations on the numbers of potential beneficiaries, we developed a seminar method for use with groups of attending physicians.

The design of the Seminar Method draws upon the process of experiential learning (Kolb, 1981) in which concrete experiences are used to derive abstract concepts which may then be applied to future behaviors. The Seminar Method presents specific examples of clinical teaching to familiarize participants with educational concepts relevant to clinical instruction (Gagne and Briggs, 1979; Skeff, 1983). The method includes five major components: 1) the viewing of re-enacted videotapes of actual attending rounds, 2) facilitated discussion of the videotapes, 3) facilitated discussion of educational concepts relevant to clinical teaching, 4) the teacher's review of his/her ratings by students and housestaff as compared to his/her own self-assessment ratings, 5) the teacher's identification of desired teaching changes.

The seminars, which are conducted by a physician trained in the method, have the following format. During a period not exceeding 2 hours, participating attending physicians view videotaped re-enactments of actual clinical teaching sessions. Each videotape lasts 3-5 minutes and is selected to exemplify both specific problems faced by clinical teachers (e.g., addressing learners at several levels simultaneously) and general educational concepts relevant to clinical teaching. These concepts include the learning climate (i.e., the tone of the

teaching session including level of stimulation and comfort), communication of the teacher's expectations, control of the teaching session (i.e., the teacher's ability to keep the session paced and focused), evaluation and feedback, techniques to increase understanding and retention (e.g., questionning the learners to check on understanding, emphasizing important points), and stimulation of further learning (e.g., encouraging further reading, encouraging consultation). The seminar leader elicits comments from each participant regarding the educational issues seen on the tapes. Using the participants' comments, the leader facilitates a discussion of the previously described educational concepts. Following the discussion of each tape, each participant records desired changes in his/her own teaching. After all the selected videotapes are discussed, each participant receives a computer printout comparing ratings of his teaching by his ward team with his own self-evaluation ratings. On the day following the seminar, each participant receives a written summary of the seminar discussion for future reference.

As with the Intensive Feedback Method, the Seminar Method was evaluated on the basis of attending physician assessments of the benefits of the method, teacher self-assessments, teacher ratings by their students and housestaff, and ratings of videotapes of actual clinical instruction. This method was also assessed using an experimental design with pre- and post-intervention measures collected on all subjects. The data were collected early and late in the attending physicians' one-month teaching rotation with the intervention occurring at mid-point in the rotation. Forty-six attending physicians from 4 hospitals participated in the study.

The results of the study indicated that teachers perceived the Seminar Method to be beneficial (Skeff, Campbell & Stratos, 1983; Skeff, Campbell, Stratos, Jones & Cooke, 1984). Participants were able to define aspects of their teaching which needed improvement, and reported changes in their teaching performance. On the self-assessments conducted early and late in their teaching rotation, teachers who attended the Seminar reported increased use of instructional skills and teaching methods related to teacher-trainee communication.

Ratings of videotapes of actual instruction provided additional support for the positive effect of the method. Trained raters who were blinded to experimental assignment (treatment vs. control group) and to the chronological order of the tapes (early vs. late in the teaching rotation) rated the tapes using scales based on the educational concepts of learning climate, communication of the teacher's expectations, control of the teaching session, evaluation and feedback, techniques to increase understanding and retention, and stimulation of further learning. Ratings were made on both the teachers' effort, or frequency of behaviors, and quality of behaviors in each of these categories. Although post-intervention differences were not detected on all scales, differences which either reached or approached statistical significance were detected on 4 of the

scales, including Learning Climate (p=.03), Control of the Teaching Session (p=.01), Techniques to Increase Understanding (p=.04), and Feedback (p=.07; Analysis of Covariance). The Seminar group was favored on each of these scales.

Analysis of students' and houseofficers' assessments of the teachers revealed mixed results. All students and houseofficers, who were blinded to the experimental assignment of their attending physician, were asked to evaluate their teachers' performance early and late in their teaching rotations. No differences were detected between experimental and control groups. In addition to rating teaching performance, students and housestaff were asked to rate the impact of their attending physicians upon their learning in several categories, including knowledge, clinical skills, patient communication skills, skills of ongoing learning, intercollegeal relationships, efficient use of time, desire to conduct research, and desire to practice clinical medicine. Although the group differences on these categories reached statistical significance in only one category (patient communication skills, p=.03), the mean ratings favored the experimental group in 6 of the 8 categories. Thus, although learners did not perceive any differences in teaching performance, they did perceive group differences in their teachers' impact.

The combined results of these studies indicate that effective methods of improving clinical teaching can be developed and that the effects of those methods can be documented. However, another barrier to the improvement of clinical teachers as a whole must still be overcome. In order for teaching improvement methods to make an impact, teachers must participate in them. It is our belief that high levels of participation in any teaching improvement method are dependent upon the inclusion in that method of a specific set of characteristics. These characteristics must take into account certain attributes of clinical teachers. We postulate that methods should incorporate 5 such characteristics. First, the method must be relevant to the teaching problems encountered by attending physicians. Second, the method must provide educational tools or concepts applicable to this teaching setting. Third, the method must actively involve teachers in the decisions regarding their teaching practices. Fourth, the methods must be practical, both in terms of the time commitment of participants and resources necessary for implementation. Fifth, the method must be conducted by a credible facilitator.

Based upon the findings from our own research, we believe that methods which are proven effective and which incorporate these characteristics have the greatest potential to reach the ultimate goal of improving clinical teaching in institutions across the country. However, the attainment of that goal depends upon continued research efforts. Further development and empirical evaluation of teaching improvement methods is needed. Few studies have attempted to examine the correlation between teaching improvement and learning. Studies which examine the

issues of institutional as well as the individual receptivity to teaching improvement methods are essential if effective dissemination of methods is to occur. Because of the importance of clinical teaching, continued research is essential.

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